sori are from 4 to 6 in number and do not so nearly cover the whole area of the pinnule as in *Dryopteris Lloydii*. The pits left

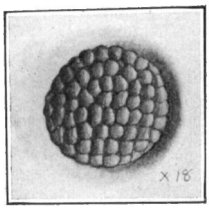

FIG. 4. *Dryopteris Lloydii*, sori, × 18.

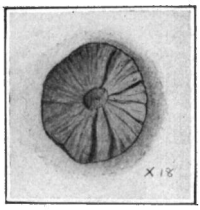

FIG. 5. *Dryopteris Lloydii*, indusium, × 18.

by the sporangia are similar in character in the two species, though not quite so numerous in the Greenland form.

SHORTER NOTES

THE HELIANTHOID GENUS TONALANTHUS.—Among the plants gathered by Dr. Purpus in 1913 in the state of Chiapas, Mexico, was a very interesting new Helianthoid genus, described by Mr. T. S. Brandegee* as *Tonalanthus*. The single species, *T. aurantiacus* Brandegee, was collected on the Sierra de Tonala. The rather brief Latin description, while adequate for recognition, does not readily enable one to fully appreciate the characters of the plant, so I offer some figures and notes, based on fragments of the type lot, very kindly communicated by Mr. Brandegee.

Involucral bracts, at least the outer ones, about 15 mm. long and 4.5 broad, parallel sided except apically; coriaceous, the basal half whitish, the apical reddish-brown; about a dozen parallel veins; dorsal surface of apical part furfuraceous, and margin very briefly, inconspicuously ciliate (fig. *G*).

Receptacle, "long, like *Lepachys*" (Brandegee litt.).

Disc bracts elongate, hyaline, divided apically into about three slender, sharp-pointed lobes, one much longer than the others (fig. *C*).

Achenes narrow, flattened, the surface, except the margins, strongly furfuraceous. Achenes about 4 mm. long, the pappus scales distinctly, but not greatly, longer (fig. *A*).

* Univ. Calif. Publ., Botany, VI, 75, Aug. 3, 1914.

Pappus of disc-achenes consisting of twelve or fewer linear paleae, each narrowly margined on each side with a hyaline striate fringe, which is very minutely denticulate on the edge, and toward the apex of the palea becomes largely modified into a very minute ciliation. The first impression one gets on examining this structure is that the palea is densely ciliate throughout, but for the greater part the elements are united nearly to the apex (fig. *B*).

Disc-corollas with a long slender basal tube, the extreme base of which is swollen (fig. *F*).

Ray-corollas with a long slender basal tube; pistil present, the style branches straight and rather long (fig. *D*); on the wall of

FIG. 1. Helianthoid genus *Tonalanthus*. For description of figures see text.

the corolla, behind the style branches, are two linear or narrowly strap-shaped processes (fig. *E*), the function of which is not evident. They do not extend down the tube, but are attached to the base of the ray.

This has to be referred to the Heliantheæ rather than the Heleniеæ on account of the chaffy bracts of the receptacle, and aside from this character it does not closely resemble any genus of Heleniеæ. The affinity appears to be with the Galinsoginæ, an apparently ancient group containing a number of American and two Hawaiian genera. The pappus of *Tridax procumbens* L. seems to show a further development of exactly the same feature as are found in *Tonalanthus*, while the disc-corollas have some of the characters of *Marshallia*.

T. D. A. COCKERELL.

THE SCIENTIFIC TYPE OF MIND

A writer in a recent number of *The Unpopular Review* scored scientists severely, claiming that they were less logical in their thinking processes, and less clear and direct in expression than men of equivalent training in literature, languages, etc.

Is this true? I do not know. I only know that many of the ninety-odd papers I heard presented during the Philadelphia mid-winter meeting of the American Association for the Advancement of Science and its affiliated societies were not papers that I would choose to present in refutation of such charges. And yet we were all men and women trained in science, most of us holding graduate degrees, or else titles granted for research or indicative of executive and administrative ability!

What was wrong? Several things: (1) The titles did not sufficiently indicate the content or trend of the contributions. This is illustrated by such titles as "The Genus *Iris*," "The Purification of a City Water Supply," or "Experimental Work in Child Psychology." The authors failed to realize that such topics do not sufficiently indicate the line of discussion—a great disadvantage when several conflicting sections are simultaneously offering programs of interest to each of us. Within the usual fifteen-minute limit, not all phases of a topic can be included, and each auditor has a right to know beforehand whether "The Genus *Iris*," for instance, means a morphological characterization of the genus, a discussion of the iris hybrids now under cultivation, or perhaps an attack on the validity of the name Iris, and a substitution of another name approved by the Vienna rules.

(2) Authors failed to distinguish between subject matter as such, and mere technique. Papers that promised to be real or important additions to our knowledge were too often almost entirely details concerning methods or mechanical procedures. Such matter should be frankly labeled "A New Method of —," "Differential Diagnosis in —," or "The Comparative Efficiency of —," etc. To do otherwise, implies an extreme lack of consideration for the audience, or a most unenviable "fuzzy mindedness" in the writer. The discussion which follows the paper gives op-

portunity for any really important details of technique; and charts (or, preferably, typewritten sheets for distribution) offer more economical and more serviceable methods of indicating such details.

(3) Those on the program often ignored the real uses of charts and diagrams: (*a*) as visual aids, (*b*) as time savers. Long lists of names, substances, etc., given orally, dull the attention of even the most interested. But charts should be allowed to speak for themselves. No speaker has any right to hold the audience while he *reads* every column or describes every curve. He should pay his auditors the compliment of recognizing that they can read, and should not persist in droning over a chart minutes after they have exhausted its possibilities. Years ago in this same Philadelphia town, a friend watched two children at play in a back yard. In her usual slow way, the older, a little girl of seven, began to tell about a kitten. Her playmate, a boy of six, fidgeted nervously, anticipated every word as she drawled out, "*Willie*, once-I-had-a-lit-tle-kit-ty,-and-once-it—" Here Willie jumped up nervously, almost shouting, "Did it bite? Did it scratch? Did it run away?" How I would have welcomed a Willie during some of the papers!

(4) Contributors too often insisted upon laying before us their day-book instead of the ledger; indeed, the balance sheet itself would often be preferable. Would it not be better to *write* our papers as we *read* the articles of others? Usually we turn first to the summary and conclusion, glance back to make sure we did not mistake Alfred J. Smith for Alfred M., who really doesn't know at all anything about the haploid chromosomes (or conical horns, or the entropy of vaporization), and then search in the appropriate parts of the paper itself to see if the striking differences noted are supported by a sufficient number of instances or experiments, or if this result is based on Smith's former method, which, you pointed out last year, was faulty in not recognizing such and such relationships; or else you measure his conclusions by that recent brilliant discovery of Brown's which promises to remodel all our theories and most of our methods in such research. Even a murder trial—or a case of petty larceny—is conducted in

much the same way. Yet most of us evidently consider it unscientific to deliver a paper so that the audience can see whither the evidence is tending. Instead, the author often leads his hearers blindfolded through the various trial by-paths, and when they are thoroughly dazed and irritated by the numerous turns and blind alleys, they are at last brought into the open and told where they are—or where they ought to be! Would any one *choose* to travel from New York to San Francisco with the names blotted from every station, and a dizzying detour at every railroad center? Somehow we prefer to buy a straight ticket for San Francisco and then to follow our route on our railroad maps station by station.

And yet we write our papers as if we felt with Barrie's mother that they must be a "manzy of different things all sauced up to be unlike" the sensible, straightforward way of proving a point; as if this natural simple method of exposition would cause our fellow members to "run about flinging up their hands and crying, 'Woe is me.'" L. H. E.

REVIEWS

Taylor's Flora of the vicinity of New York*

During the quarter of a century that has elapsed since the publication by the Torrey Botanical Club of the "Preliminary catalogue of Anthophyta and Pteridophyta reported as growing spontaneously within one hundred miles of New York City,"† knowledge concerning plant distribution within this area has been greatly extended and, especially during the last few years, much of this data has been recorded in several more or less comprehensive local catalogues. The consummation of the scheme originally projected by the committee on local flora of the Torrey Botanical Club is seen in Taylor's "Flora of the vicinity of New York." The area included by the present work is the same as that covered by the preliminary catalogue. It comprises all of the states of Connecticut and New Jersey and the parts of New York and Pennsylvania within a radius of slightly more than one hundred miles from New York City. The general plan of the

* Mem. N. Y. Bot. Garden 5. vi+683 pages. 9 maps. 30 Jan. 1915.

† Pp. xviii+90. Map. New York. 1888.